

[Amendment under PCT Article 34 Filed on March 26, 2004]

**What is claimed is:**

1        1. A porous substrate, comprising a plurality of porous layers  
2    thereon, wherein the average opening diameter of pores in a porous  
3    layer of said plurality of porous layers positioned in an  
4    outermost surface is smaller than the average diameter of pores  
5    in a porous layer of said plurality of porous layers positioned  
6    on a substrate side relative to said porous layer positioned in  
7    said outermost surface.

1        2. A porous substrate, comprising a plurality of porous layers  
2    thereon, wherein the average opening diameter of pores in a porous  
3    layer of said plurality of porous layers positioned in an  
4    outermost surface is smaller than the average diameter of pores  
5    in a porous layer of said plurality of porous layers positioned  
6    on a substrate side relative to said porous layer positioned in  
7    said outermost surface; and the volume porosity of said plurality  
8    of porous layers is 10 % - 90 %.

1        3. A porous substrate, comprising two porous layers thereon,  
2    wherein the average opening diameter of pores in a first porous  
3    layer of said two porous layers positioned in an outermost surface  
4    is smaller than the average diameter of pores in a second porous  
5    layer positioned on a substrate side relative to said first porous  
6    layer; and more than 50 % of said pores in said first porous layer  
7    penetrate from the surface of said first porous layer to the

8 interface between said first and second porous layer.

1       **4.** A porous substrate, comprising two porous layers thereon,  
2 wherein the average opening diameter of pores in a first porous  
3 layer of said two porous layers positioned in an outermost surface  
4 is smaller than the average diameter of pores in a second porous  
5 layer positioned on a substrate side relative to said first porous  
6 layer; more than 50 % of said pores in said first porous layer  
7 penetrate from the surface of said first porous layer to the  
8 interface between said first and second porous layer; and the  
9 volume porosity of said first and second porous layer is 10 %  
10 - 90 %.

1       **5.** The porous substrate according to claim **3** or **4**, wherein  
2 said first porous layer comprises a metal material.

1       **6.** The porous substrate according to claim **3** or **4**, wherein  
2 said first porous layer comprises a metal oxide, a metal nitride,  
3 or a metal carbide.

1       **7.** The porous substrate according to claim **3** or **4**, wherein  
2 said second porous layer comprises a semiconductor material.

1       **8.** The porous substrate according to claim **3** or **4**, wherein  
2 said second porous layer comprises a group III nitride series  
3 compound semiconductor material.

1       **9.** The porous substrate according to claim **3** or **4**, wherein  
2 said first porous layer comprises TiN or Pt, and said second

3 porous layer comprises GaN.

1       **10.** [Amended] The porous substrate according to claim 3 or 4,  
2 wherein said average opening diameter of said pores in said first  
3 porous layer is not more than 1 $\mu$ m.

1       **11.** The porous substrate according to claim 3 or 4, wherein  
2 the film thickness of said first porous layer is not more than  
3 1 $\mu$ m.

1       **12.** A fabrication method for a porous substrate, comprising  
2 growing two or more different material layers on a substrate,  
3 heating said each layer, and thereby forming two or more porous  
4 layers with pores therein.

1       **13.** A GaN series semiconductor layered substrate, comprising  
2 a GaN series semiconductor layer grown on a porous substrate  
3 defined in any one of claims 1-11.

1       **14.** A fabrication method for a GaN series semiconductor  
2 layered substrate, comprising growing two or more different  
3 material layers on a substrate, heating said each layer, thereby  
4 forming a porous substrate with two or more porous layers having  
5 pores therein, and growing a GaN semiconductor layer on that  
6 porous substrate.